S. Waldburg

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The Subscribers to the Southern Agriculturist are reminded, that the Price of the Journal was reduced last year to all those who paid in advance; those who are still in arrears for this and former years are respectfully solicited to make their payments.

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THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

Vol. IV. FOR OCTOBER, 1844. No. 10.

THE COTTON CROP OF THE UNION.

IMPORTANT FACTS.

Mr. Ellsworth, Commissioner of Patents, estimates the cotton crop of the Union for 1843, at 724,660,090 pounds. He remarks that this most important project and staple of our country, is confined to a few States, and the greater part of the whole crop is furnished by four States, namely: Georgia, Alabama, Mississippi, and Louisiana. He remarks that from the 1st of January to the 29th of December 1843, the amount of cotton imported from the United States was 1,287,937 bales; while from the 1st of January to 29th December 1842, the amount of the same import was only 957,609 bales; being an increase of 330,328 bales. From January 1st, to December 29, 1843, the amount of cotton imported into England, from all other countries except the United States, was 264,254 bales; while from January 1, to December 29, 1842, the imports of the same description amounted to 290,235 bales; thus showing a decrease for the last year of 25,981 bales. The decrease appears to have been principally in the cotton import from India, as the falling off for the past year on these descriptions of cotton (Surat, Bengal, and Madras,) amounted to 59,142 bales; so that the increase of the Brazil and Egyptian cotton was 34,734 bales. The proportion of all the other descriptions of cotton to that of the United States, is nearly one-fifth. The estimated stock on the 30th of December 1843, in England, was from the United States, 440,800 bales, being 180,600 bales more than on December 30, 1842; of the other descriptions, 213,000 bales, or 16,500 more than on the same date in 1842; and nearly one-third of the whole stock on hand.

Mr. Ellsworth thinks that although the English have failed in their experiments with regard to cotton in British India, they will still persist. Also, that they will direct their attention to Texas, inasmuch as that country affords more facility for rivalship with us than any other. Texas, he remarks, is said to contain 318,000 square miles, or 203,520,000 acres. The States of Mississippi,

Georgia, Louisiana, Alabama, Arkansas, and South Carolina together, which raise nearly nine-tenths of the whole cotton crop of the United States, contain but 301,000 square miles, or 192,640,000 acres. The latitude of 33½ degrees is said to be the best cotton land; below this, it is more exposed to insects; and further to the north, it becomes scrubby, and is exposed to frosts. This remark especially applies to Georgia, South Carolina, and Alabama. As we go westward beyond the Mississippi, a lower latitude will do better. Cotton needs dry land; wet and cold land is not good. The crop above 34 degrees or 35 degrees is uncertain, and below 32 degrees its quality very much deteriorates. In the Mississippi valley, a latitude below 32 degrees is not so good as on the seaboard. In Alabama and Florida it is somewhat better; still, the south part of Alabama is comparatively poor land. As we go towards Texas, the cotton lands reach still lower; and, in inspecting the maps, it will be seen that it is well situated for being a great cotton-growing country. When we consider how the culture of cotton has proceeded from the east to the west, we must expect that it will still follow the same direction. It is said, upon good authority, that there is as much good cotton land in Texas, for the maximum qualities of cotton, as there is in the United States. The red lands of Texas, which lie on the eastern part of the country, adjoining the United States, between the Red, Sabine, and Neuches rivers, are said to be good cotton lands. These two latter streams empty into the Gulf of Mexico—the former into the Mississippi. Louisiana and Mississippi are likewise said to contain much land that is too poor for cotton, though it is good grazing land. A great deal of the land in these States is a sandy soil covered with pines, but which, when once cut off, leaves the land low, and for cultivation poor. The effect of the heat on the soil is to abstract the nutritious parts of the manures furnished; and this is the cause why manures are dissipated so much sooner in warmer than in colder climates.

Besides these comparative views of the land of Texas and the United States, in respect to the capacity for the cotton crop, there are other considerations which deserve to be regarded on this question. The following observations are taken from an able article on the subject of cotton in the Merchants' Magazine, published at New-York, January 1844. The facts presented are of great importance: "The average increase in the growth of cotton in the United States, for the last twenty years, appears to have been about 7 per cent. per annum. But there is a limit to the extension of cultivation, and there is no longer a capacity in the United States, without a great diversion of labor from other pursuits, to increase the growth of cotton in the ratio of 7 per cent. per annum. The average crop of the United States for five years from—

1836 to 1840, was 1,625,000 bales.
1837 to 1841, was 1,680,000 bales, average increase 3.38 per cent.
1838 to 1842, was 1,732,000 bales, average increase 3.28 per cent.
1839 to 1843, was 1,848,000 bales, average increase 6.69 per cent.

Making the average increase for these eight years 4 41 per cent.

In this period are included three very large crops, and only one very short crop; and it will, probably, be fairer to take the difference between the crops of 1843 and 1840, (the two fullest and largest crops ever made,) which difference is one hundred and ninety-six thousand bales. This shows an annual increase in the last three years of about three per cent.; which may be assumed as the probable increase of the growth of cotton in this country for a series of years to come, provided no extraordinary occurrences interpose to disturb the settled and steady progress of events.

He states other facts, and arrives at the conclusion that Texas should probably be regarded as our most formidable future rival in the culture of cotton.

The manufacture of cotton bagging is, says Mr. E., becoming an object of very great importance at the south. The amount made in some of the Western States is thus estimated in a public journal:

	YARDS.
350 hand looms in Kentucky make - - -	6,880,000
Fulton Bagging Factory, Cincinnati, - - - -	800,000
Power looms at Maysville, - - - - - -	700,000
Power looms at New Albany, - - - - -	200,000
Power looms at Louisville, - - - - -	1,400,000
Power looms at Missouri, - - - - - -	220,000
	10,200,000

This is said to be within three millions of yards of what is annually required for the cotton crop.

He concludes his paper on the cotton trade and culture, with this language: "The effect of the productiveness of the cotton crop in the market, will probably be to render the South more a customer to the West for the other products of agriculture. Still, on comparing the two crops of 1842 and of 1843—the former a large, and the other a diminished one—unless the rise on the price exceed two cents on a pound, there is no actual increased profit on the whole aggregate for the year. *

* It has been ascertained that the crop of 1843, amounts to 2,030,000 bales.

The following Table shews the quantity of COTTON and TOBACCO grown in each State, extracted from Mr. Ellsworth's Report, for 1843 :—

State or Territory.	Tobacco. Lbs.	Cotton. Lbs.
Maine	78	
New Hampshire	277	
Massachusetts	93,891	
Rhode Island	481	
Connecticut	601,282	
Vermont	742	
New York	1,052	
New Jersey	2,840	
Pennsylvania	441,944	
Delaware	381	
Maryland	20,775,702	7,677
Virginia	41,918,040	3,353,756
North Carolina	14,548,785	46,934,276
South Carolina	50,254	55,219,697
Georgia	130,201	185,758,138
Alabama	248,177	112,020,112
Mississippi	140,855	162,664,350
Louisiana	111,057	128,912,253
Tennessee	29,335,868	32,938,410
Kentucky	52,322,543	737,648
Ohio	5,991,296	–
Indiana	2,899,844	168
Illinois	965,260	214,007
Missouri	14,700.089	149,889
Arkansas	216,508	11,520,467
Michigan	3,187	–
Florida	155,509	7,229,206
Wisconsin	425	–
Iowa	13,271	–
District of Columbia	61,715	–
	185,731,554	747,660,090

TOBACCO.

Next to cotton, tobacco is one of the most important staples of our country. Our soil is peculiarly adapted to its culture, and the means of extending its sale and consumption in Europe, where high and prohibitive duties are imposed, and where the trade is

entirely monopolized by Governments for revenue purposes, have for many years been sought by our diplomatic agents abroad, in obedience to special instructions. [*Hunt's Merchant's Magazine.*

The export of tobacco from the U. States, since 1821, has nearly doubled, but that increase has been mostly to the north of Europe, say Holland and Germany; while to Great Britain the export has scarcely increased at all, notwithstanding that the population has increased near 7,000,000 souls.

In fact, the consumption of tobacco, per head, as charged with duty, has decreased since the commencement of the present century, in proportion to the increase of duty. Parliamentary tables furnish us with the following statistics in relation to this matter:

Consumption of Tobacco in Great Brttain & Ireland.

Lbs. consumed.	Duty per lb.	Population	Av. consumption per head.	Amount of Duty receiv'd.
1801 10,514,993	1s. 7 6-20d	10,942,666	15,37 oz.	£923,855
1811 14,923,243	2s. 2 13-10d	12,596,893	18,95	1,710,848
1821 12,982,198	4s. 0	14,391,631	14,43	2,630,415
1831 15,350,081	3s. 0	16,539,318	14,84	2,838,107
1841 16,380,893	3s. 0	18,532,235	14,52	2,716,117

This presents a constant decrease in the consumption per head, but the result in the case of Ireland is much more marked—as follows:

Lbs. consumed	Duty per lb.	Population	Av. consumption per head	Amount of Duty receiv'd
1801 8,389,754	1s. 3 1-10d	5,451,002	18,95 oz.	£285,482
1811 6,553,024	1s. 7	7,036,008	17,35	552,082
1821 2,614,954	3s.	6,801,827	6,15	528,168
1831 4.188,823	2s.	7,767,401	8,61	629,485
1841 5,478,767	3s.	8,179,350	10,71	363,946

The highest consumption for the United Kingdom, was, it appears, in 1811, when the abundance of depreciated bank paper, then serving as a currency, made the tax comparatively light. When money is very cheap, taxes are easily paid, but the same taxes become exceedingly onerous when money is dear. In 1821, both the rate of tax was enormously increased, and the currency made very dear by the resumption of specie payments by the Bank of England. Hence the enormous falling off in the consumption visible in that year, both in England and Ireland, more particularly the latter country. Since then the currency has become better adjusted, and the consumption has increased under the same tax. Now the exports of tobacco in England with the total export in each year, has been as follows:

Tobacco Exported from United States to England.

	Hhds.	Total from United States.	Value.
For ten years to	241,919	824,245	$56,889,391
1831	26,372	89,718	5,184,863
1832	26,176	106,806	6,291,540
1833	23,772	83,153	6,044,941
1834	30,658	87,979	6,923,714
1835	27,563	94,353	8,608,188
1836	36,822	109,442	10,494,104
1837	20,723	100,232	6,223,483
1838	24,312	100,593	7,969,449
1839	30,068	78,995	10,449,135
1840	26,235	119,448	9,883,957
1841	41,648	147,828	12,576,703
1842	36,886	166,113	9,540,755

The greatest increase in the export to England was in the years 1840 to 1841. For the three years, 1839, 1840, and 1841, the British customs returns give the following result:

Year,	Llbs. Imported	Entered for consumption.	Duty.	
1839	35,609,183	22,871,406	£3,431,607	$16,473,227
1840	35,637,826	22,602,380	3,555,956	16,924,590
1841	43,935,151	21,871,438	3,550,835	17,044,955

This affords an indication of how large a quantity must have been smuggled under the present duty of 3s. per lb. There are no precise data by which to arrive at the expense of smuggling. If by a reduction of the duties on tobacco, the average of the consumption of the United Kingdom is restored to where it was in 1811, which was 2 oz. per head above the present consumption, an increase of the demand equal to 8,300,000 lbs. will take place, and will progress, probably, in proportion to the increased production of the Western States, so as to relieve the Virginia planters from the pressure which the increased supply from those sections causes, and which is evinced in the increased deliveries at New Orleans.

Tobacco is now produced in Illinois of a very superior quality. Other changes have taken place, and even in Connecticut, it is now produced with advantage to the grower, as well as in Indiana, Ohio, and Kentucky, at a better profit than even wheat, or Indian-corn.

Tobacco is *manufactured* in all the States except Vermont and Wisconsin. In this branch of business 8385 persons are employed, and $3,487,191 of capital invested. The value of the product is $5,819,598, nearly one half of which is in Virginia.

Extract from J. G. Harris' Letter to Freeman Henry.

"With reference to the tobacco of the Eastern States, Virginia, Maryland, &c., it bears better prices abroad than the Western qualities; not because it is considered so much superior to the

Kentucky, Tennessee, Missouri, &c., but because there is so much of it constantly in market, and the crop of the West has so rapidly increased from year to year. Owing too, perhaps, to the fact that our Eastern planters set their own prices to a greater or less extent, diminishing the culture, or holding up a part of the crop, at proper times, in order to bring about remunerating prices.

"In reply to your inquiry whether it is probable that those Governments of Europe, which monopolize the tobacco trade within their dominions, can be induced to abolish their exclusive systems, and permit us to trade freely with their people in that article, I am constrained to believe that all persuation must continue, as heretofore, to be without effect. For France, which annually derives $20,000,000, and Austria about $12,000,000, cannot be expected to give up so great a source of revenue in consideration of any arguments or any commercial advantages that our country can offer in return. But in England and in the German States composing the Zoll Verien, where tariffs only exist, there is some prospect of a reduction of existing high duties. In England the duty is so high that it operates as a premium upon smuggling; and the illicit trade has recently been carried on to such an extent, that all the honest manufactures have become unusually clamorous for a reduction of the premium thus paid to the contrabandist. About the time I left Europe, the British Government was instituting a searching inquiry, not only concerning the great cases recently detected, but into the whole system. A committee was then sitting in London, at the head of which was Lord Somerset, one of the most influential members of the British administration, and I learned from a source entitled to great credit, that many members of the Government had come to the conclusion that, although a reduction of the present duty might affect the revenue a little for two or three years, yet it would not suffer ultimately by it, inasmuch as smuggling would, in a great measure be prevented, and the duty paid on a much greater quantity."

From the American Farmer.

THE FOOD OF PLANTS--ITS MODE OF PREPARATION.

The following extract from the *Address* of *Dr. Daniel Lee*, delivered before the Agricultural Society of Erie Co., N. Y. will be read with interest by every intelligent reader. The theory and principles laid down by the Dr., are so beautifully illustrated, as to fix them upon the mind as well by the chemical truths enforced, as by the simplicity and familiar manner in which he attempts to convey his own impressions to the understanding of his hearers.

We are gratified to find that we are sustained by Dr. Lee, in in the views we have often attempted to impress upon our patrons, that *small doses* of lime *often applied are preferable to large ones.* We will not, however, detain our readers with any further remarks upon this head, but commend them at once to the following extract from his address:

"Gentlemen: I have in this glass, water taken from a well near my residence in this city, such as is used by my family and others. You see it is quite clear, although I suppose it holds in solution among other earthly ingredients, a portion of lime. Every time a person breathes, he expels from his lungs carbonic acid, which, as I have told you, is the appropriate food of plants. I will now breathe into this water and see what, if any, effect will be produced. You see the water is changed to a milky whiteness.

"You will recollect the question to be solved was: how to seize upon the carbonic acid expelled from organic beings, in order to change it back again into new plants and animals. By understanding the laws of chemical affinity, I have seized upon a valuable earthy manure, lime, which robbed the soil of an indispensable element when it left it; being dissolved in rain water, in its passage from the surface of the ground through the earth to the well, from whence it was taken. On the other hand I have *petrified* in this white power, which is the carbonate of lime, a portion of my brain, nerves, muscles, fat, bones, &c., which may be converted into wheat, corn, and potatoes in a day; or may be kept without change a thousand years.

"The peculiar value of this artificially formed carbonate of lime over the crystalized carbonate that forms about one-eighth part of the earth's crust in this: that the vital action of the roots of plants will decompose an impalpable powder like this, sooner than fragments of lime-rocks in the soil. Hence slaked lime is more valuable as a manure, than unburned limestone. No sooner, however, is this carbonate decomposed by the action of a living growing plant, than the free lime, whose carbon has gone to build up a vegetable, takes up another, and still another portion of carbonic acid. At night, plants consume no food, or very little, but digest what they have imbibed during the day.

"The chemical affinity between lime and carbonic acid, accumulates vegetable food at the roots of plants during their sleep at night, and when the light of day awakens their vegetable appetite, the lime that was free at sun-down, has prepared for them a good breakfast, which, for aught we know, may be, as in this instance, a portion of a human eye, or a human heart. When, however, the lime is deprived of its carbonic acid, it is soluble, as you have seen, in water; which, sinking deep into the earth or running off from its surface, growing plants are robbed of this source of food. *The only remedy for this is to apply a little lime evenly over your grass, and your cultivated fields; and to apply it often, if your wheat*

or grass fail to answer your just expectations. True economy in the feeding of plants, like feeding of domestic animals, consists in giving them just what they will eat up clean, and no more. Much of the excess of food will be dissolved in water, and carried beyond the reach of your growing crops. Still more will escape into the air, by the combined action of heat, lime, and electricity.

"I have stated to you that most plants require, in addition to water and carbon, a portion of nitrogen. This also comes from a gasseous substance in the atmosphere. Although nitrogen forms the largest element in the air, (79 per cent.) yet it has been pretty well settled that plants do not obtain their nitrogen by decomposing common air, but derive it from ammonia, which is furnished to the atmosphere in great abundance by a world of decomposing vegetables and animals. It is the ammonia that escapes from putrifying substance that causes such offensive smell. Now, again, comes up the practical question: how are we to collect this highly valuable gas, and transform it at the cheapest rate, into wheat, beans, cheese, and wool, of which it is an important element? Rain-water has a strong affinity for ammonia; which is a compound of 14 parts of nitrogen and 3 of hydrogen. Water at 50 degrees will absorb 650 times its bulk of this vegetable food. Every rain, then, brings considerable quantities of it to the ground. It is the ammonia in rain water that imparts to it, its peculiar softness in washing the hands or clothes. It is the ammonia in snow that makes it valuable as a manure; and it is the ammonia in rain-water that causes it to putrify in some degree, like an animal substance, when water is permitted to stand in warm weather, in a close vessel above ground. The first fall of a rain after a long drought, is much the richest in this gas. Being extremely volatile it escapes into the air again after a warm shower much quicker than water evaporates. What then will aid the cultivator of plants, and seize this volatile ammonia, as lime does carbonic acid, and hold it permanently about their roots, in such a shape that it will feed them all they need, and no more? For an excess of this stimulating alkali, like an excess of salt in our food, will destroy life instead of supporting it.

Common Charcoal is the cheapest, and therefore the best material to apply to cultivated fields for this purpose. It will absorb 90 times its bulk of ammonia, and will give it out slowly to the vital attraction of the roots of plants. Most of you know that charcoal will correct the taint in meat; will purify rain-water in a suitable cistern, so as to render it the purest water for culinary purposes. Such charcoal should be often renewed in filtering cisterns, and when saturated with ammonia, is an extremely valuable manure. The liberal application of this well-known substance to the wheat fields in France, has mainly, in connection with the use of lime, added within the last ten years 100,000,000 bushels to

the annual crop of wheat grown in that kingdom. The charcoal should be sown in May, at the rate of 75 bushels per acre, well pulverized. This subject is one of vast practical importance.—By studying the science of agriculture, you may grow fifty bushels of good wheat on any acre of your land, I have good reason to believe, every year, baiting of course extreme casualties.

"You all know that, a single kernel of wheat, will, sometimes, when its fecundity is highly stimulated, send up 20 stalks, and that each stalk will bear a head containing 100 kernels. Here is a yield of 2,000 fold. Nature then has rendered it practicable to harvest 2,000 bushels of good wheat from one bushel of seed. The most sceptical among you will not deny that 2,000 kernels have been produced from one kernel, and that the same natural causes that produce such a result in one instance, will ever operate, at all times, under like circumstances, in the same manner. Hence it is but reasonable to say that nature is quite as willing to produce 50 bushels of good wheat on an acre of ground every year, mark me, *if her laws be obeyed*, as she is to grow fifty bushels of weeds every year on the same ground."

From the Albany Cultivator.

STAGNANT WATER.

Of all the causes that contribute to render soils poor and worthless, we believe there is none more active than stagnant water, on the surface or immediately below. Such soils are invariably close and tenacious, and commonly quite unproductive. Where there is a retentive subsoil, the surface generally abounds in clay, is difficult to work, and gives a less reward to labor than almost any other. This is owing to the stagnant water held by it, as none of the valuable plants can flourish in a soil so constituted. Land is liable to injury from this cause, on which water during wet weather rests on the surface for even a short period, for the roots of a plant cannot penetrate a soil freely, in which the density is such that rain water does not freely sink through it to the natural drains in the subsoil, below the ordinary range of the roots of plants. Water is essential to the growth and perfection of plants, but water that does not circulate, or which exists in too great quantities, is fatal to them; and the first thing to be done, is to free soils from this incumbrance, if we would give it productiveness, and render it easy of culture.

It is from these well known effects of stagnant water, when on the surface, or within reach of the roots of plants, that the necessity of draining arises, and which system of operating, when fully carried out, completely changes the character of lands submitted

to such a course. Manures applied to soils abounding in stagnant water, can produce little effect; the salts they contain are diluted, and cannot produce that action, or circulation of atoms, which appears absolutely necessary to productiveness. In clay, or in stagnant water, where substances are not exposed to heat and atmospheric agencies, decomposition is slow. Every farmer knows that manures produce much more effect on loam, gravel, or drained clay soils, than on those so retentive as to have water on or near the surface. Draining them, and æration, or the exposing the soil to atmospheric action, to the influence of the sun and air by deep ploughing, seems to be the only thing that can be relied on to correct this serious evil.

Instances indeed occur in which the wetness of land is produced by springs, which rising from the earth, spread over it; but in far the greater number of cases, the stagnant water is owing to a retentive subsoil, that prevents the escape of such water as falls upon it. In either case, however, the remedy is the same; and in the language of Morton on Soils, complete and perfect draining is the foundation of all improvement in husbandry, and it should, therefore, be the first step which we take in attempting to improve or ameliorate the soil.

A very large proportion of the lands in this country, are of that class that suffer more or less from the accumulation of water. No person can traverse it in various directions, without being sensible of this fact; and in consequence of such liability to suffer, the land in many districts is cold and poor, as land not freed from stagnant water always must be. The hard pan lands which cover so large a portion of the country, may be named as belonging to this class, though some of these contain more clay than others, and are therefore more shallow and difficult to work than others, where the subsoil, although still too retentive, lies deeper, and is therefore not so injurious as the first kind is well known to be.

Much of this hard pan, when freed from its stagnant water, drained and ploughed, will become very fertile and productive; indeed there is no case in which a soil cannot by sufficient labor and expense, be made precisely what is desired. The native earths that go to constitute soils, the clay, sand, and lime, in themselves do not make a soil productive; properly mixed and proportioned they constitute a base for the action of the vegetable and animal manures, and the various salts or stimulating agents, that excite the organs of plants to vigorous action, and enable them to make these secretions from the matter furnished them, to be appropriated to the growth of the plants. Man, then, has only to do what nature in some cases has herself done; that is, so proportion the several ingredients that go to make a productive soil, that the desired result shall be attained. Chemical analysis has here come to the aid of the agriculturists, and shown him precisely the proportion of the earths, and the nature of the ingredients that

are necessary to make a soil fertile, and the causes that tend to advance or retard such a consummation. Where water is too abundant, it must be removed by draining; where the soil is too compact, it must be loosened by deep or subsoil ploughing; where the proportion of clay is too great, sand must be added until it is sufficiently friable; if lime is absent, it must be added; if animal or vegetable matter be wanting, it must be supplied; and if the soil is too light and porous, clay will be found a remedy most effectual.

Whatever difference of opinion, therefore, may be entertained of the best methods of freeing land from stagnant water, there can be no reasonable doubt of its propriety or necessity. To the farmer who has lands wet, cold, and difficult to cultivate, we would say, free your soil from all stagnant waters to the depth of eighteen or twenty-four inches; loosen it to that depth, either at once or gradually, and there will be no difficulty, under a judicious course of cultivation, of producing on lands now of little value, all the most important products of agriculture.

From the American Agriculturist.

NEW-YORK AGRICULTURAL INSTITUTE.

The object of this Institute is to afford facilities to those desirous of entering upon a course of study preparatory to farming, the advantage of which has been made evident by the researches of a large number of scientific men and experienced agriculturists.

The necessity for an improved system of husbandry is apparent from the decreasing harvests of many parts of the sea-board States. The present reckless tillage of too many of our farmers, reduces the finest lands to sterility by a succession of exhausting crops; and emigration is the consequence. These evils, unless speedily checked, will destroy our prosperity; for the cultivation of grain is becoming unprofitable, and too great an importation of food from the west, would in a short time absorb the resources of the wealthiest eastern States. The only effectual remedy is the improvement of cultivation; not a mere application of tons of manure, and shiploads of lime, per acre, *but their economical use.* Common manuring has been practised from the remotest antiquity, and good crops have been obtained; *but it is the judicious addition of such substances as are necessary to the soil, in proper quantity, with a view of attaining a definite purpose, that constitutes professional agriculture.*

To individuals, this system will prove a source of wealth, even on ordinary lands. Less capital is required to hold the same

surface, because every acre yields a revenue; two or three crops can be taken annually, where one is now scarcely attainable; the heavy expenses of manuring and keeping stock are reduced to a trifle; and machines can be made to perform much of the work now in the hands of laborers, sustained at a heavy expense. In maintaining sheep and cattle, the use of food properly prepared and selected for its chemical value, will reduce the charges to the lowest point, while the development of the animals is better secured.

By requiring a preliminary course of studies, and introducing the exactness of science into agriculture, it will rise to the dignity of a PROFESSION, and be regarded as a suitable calling for persons of liberal education, itstead of an obscure art. Numbers of talented young men, who, after leaving college, see no other roads to distinction or wealth but medicine, engineering, law or divinity, will direct their energies towards the improvement of farming; a change not less serviceable to the art than advantageous to themselves; whereby they exchange the uncertainty of competition in employments already overstocked for the certainty of systematic agriculture. The studies of the institute are agriculture, chemistry, analysis, and physiology; and measures have been taken to introduce a course of instruction in agricultural mechanics and rural architecture. These are distinct classes, so that students can attend any separately.

In *Agriculture* will be taught all facts in chemistry, geology, and botany, useful to the farmer—the drainage and preparation of soils —the collection, storage, and preservation of provender and fruits —the feeding and improvement of stock—management of orchards, vineyads, &c.—the preparation and *economy* of manures, both organic and mineral, with their action and causes of success or failure. In short, all the topics embraced in the courses given by Professors of Agriculture in European colleges, will be discussed.

Chemistry, as an abstract science, is taught by PROFESSOR DRAPER in the University.

Anatomy and *Physiology* by PROFESSOR PATTISON. This course is directed more especially to an examination of the structure and functions of the human body, and may be attended with great profit to the student.

Analysis of Soils, the ashes of plants, and manures, will be conducted by the students under the direction of the subscriber, with such assistance as may be required.

The city of New-York offers numerous advantages in carrying out the objects of the Institute—the facility of access—the high cultivation of many farms, nurseries, &c., in the vicinity—the conservatories and market gardens—the large collections of farming implements—the choice seeds obtainable—the numerous artificial and mineral manures that can be examined—constitute it the best

locality in the United States. Good board and lodging near the University can be had for from $2 50 to $3 00 per week.

The *Institute* is situated in the University of New-York. It opens the first Monday of November, and continues in session until the 1st of March. This period has been chosen for the accommodation of those engaged in farming. Fees for the course on Agriculture, $20; for Analysis, $30; for both, $40. The courses on Agriculture and Analysis are conducted by

D. P. Gardner, M. D.,
Formerly Prof. of Chemistry, &c., in Hampden, Sidney College, Va.

For further information, address, post-paid, Dr. Gardner, 412 Fourth street, New-York.

From the Charleston Mercury.

THE DUCK PLANT

For the introduction into our country of this very singular production of nature, we are indebted to a lady of this city, who made a drawing and brought specimens of it from Cuba, in 1840. It had been but recently received from Mexico, and at that time, existed only in a single garden in Havana. After several unsuccessful attempts at raising the Plant from seeds and cuttings, we received it through the kindness of a friend, planted it in the open ground of the garden in May last, where it covers a large arbour and is flowering profusely. It exists also in the Nursery Garden of Mr. Thompson. As the only description we have seen of this singular species is contained in a single line in Loudon, a fuller account of it may not be unacceptable to your readers.

Aristolochia fœtida.

Class, *Gynandria*. Order, *Hexandria*.

Natural order, *Aristolochiacæ*.

Generic character. Calix none. Carolla one petalled, tubular; filaments, none; anthers six, fastened at bottom to the stigma—six parted. Seeds several, depressed.

Specific character. Plant climbing, ever-green, stem twining, branching; leaves large, petiolate cordate, acute, strongly veined, dark green above, lighter beneath. Flower stalk about a foot long.

The great singularity in this species consists in the flower, which bears a general resemblance to some water fowl, and is supposed to be not unlike a Duck, hence its English name. A full grown flower, including the tail, is about three feet long; the curious appendage, not inaptly called the tail, is about twenty-two inches,

body eighteen inches in circumference. There is, however, a considerable variation in the size of different flowers, although in shape they are remarkably uniform. When several of these flowers are hanging on the vine, they present the singular appearance of a number of strange birds suspended by their bills and dangling in the air. On a cursory view it requires no great sketch of the imagination to see in this flower a compound of various species of water fowl; the large head and elevated bill of the goose, the curved neck of the swan, the pouch of the pelican and the body of the muscovey duck; the long pendulous tail has no resemblance to that of any of the feathered tribe. The body is tubular, presenting the appearance of being inflated—the whole flower is strongly ribbed to prevent it from collapsing. Its color is pale yellowish green veined and reticulated with light purple.

If the external appearance of this flower is very striking, the internal structure is still more remarkable. When it has arrived at its full growth, a seam opens longitudinally in the interior position of the body, presenting the internal surface of the carolla, beautifully spotted with dark purple on a light yellow ground like the markings on the flowers of some of the species of stapelia. Around the opening into the throat, the color is of a rich dark purple, approaching to black. The opening into the neck and head is not unlike that of the windpipe of some of the feathered tribe. This narrow orifice is lined with thick hair or bristles pointing upwards so as to form a kind of funnel similar to the entrance into a wire mouse trap; above this, and as it were in the bill and head of the bird, is the stigma, on which the stamens are inserted. These stamens which contain the pollen or dust that fertilizes the seed, hang downwards, and we are at a loss to conceive in what manner the anthers can deposite the pollen on the stigma, inasmuch as they are situated below it. Here nature seems to have made a wise provision, in calling in the aid of art to effect its purposes. No sooner is the carolla expanded, than a strong and disagreeable odour issues from the throat of the flower. This attracts the insects and they immediately and by dozens enter the orifice where they are totally unable to return, in consequence of the points of the hairs meeting them. Their confinement soon becomes irksome; they keep moving about continually and thus stimulating the filaments; the anthers now either eject the pollen on the stigma or what seems most probable the pollen is conveyed thither by the insects. But after the flower has become fertilized, the hair shrinks, becomes flaccid, hangs down close to the side of the flower, and the little prisoners then leave their cage. A species of this genus (*a. Clematis*,) found in England, is stated by Professor Wildenon, (Paxton, 1st vol. p. 63, whose words I quote in part,) to have properties similar to that which the present species appears to possess. That plant, however, was visited only by a particular species of gnat, (*Cecido-*

mia,) the flower of the present species contained several kinds of insects, the common house fly being most abundant, and the blue bottle or flesh fly being also quite common.

There are among flowers an endless diversity of structure and color, some commanding our admiration by their superlative beauty, whilst others arrest our attention by the singularity of their forms. Whilst there is in man an intuitive love of beauty, his unconquerable love of novelty is frequently paramount, and a singular and curious object is more highly prized than one truely graceful.

The very remarkable plant now under consideration, presents some beauty in its luxuriant, dark-green foliage, but this in itself would not strike us as peculiar, were it not for the flower which contains more singularities than any other plant with which we are acquainted, with the exception of the Venus' fly-trap (*Dionaea Muscipula.*)

In the diversity of forms existing in animal and vegetable nature —in the real or fancied resemblances between species of very opposite characters, and more especially in the inappropriate and often absurd English names frequently given to them, those who are ignorant of the laws of nature, are led to the erroneous conclusion that there is a connecting link in the great chain of creation between these vegetable and animal productions. There are many flowers called personate flowers that resemble the countenances of various kinds of animals. The curious and imaginative have seen resemblances in the faces of their domestic cattle to the human countenance. Indeed, the Ettrick shephard came to the conclusion that by a long association with his faithful dog, their countenances had gradually put on a similar expression. In all these cases it is evident that a single point of resemblance, when the species differ in every other characteristic does not constitute an affinity. It is not in a mere resemblance of external forms, but in the internal structure and a similarity in many essential particulars that naturalists seek for evidences of a near approximation of species. Nor should we be misled by the vulgar names given to different species. The so called sea-horse sometimes found in our harbour is pretty nearly allied to the shrimp, and is generally less in size— the sea-lion is a large ugly seal, and the sea-dog is a smaller species of the same genus. Among plants we have the snail flower; the snake-plant; the side-saddle flower; the alligator-melon; the duck plant, &c., agreeable to this absurd theory, there would be a connecting link between the horse and shrimp, the squash and the snake, the alligator and the melon, and our curious Sarracenia and a ladies side-saddle. These vulgar names and real or fancied resemblances may mislead the uninformed, but have no effect on the minds of men of science.

This species may be easily multiplied by layers which root very readily. The plants should be kept in a green house or

warm room during winter and planted in the open garden in spring. A single stem readily covers a pretty large arbour in a few months, and will continue to flower profusely till checked by a frost. The old root may possibly survive the winter, provided it be carefully and warmly covered. J. B.

From the London Gardeners' Chronicle.

HYBREDIZING.

Among the many contrivances by which man has succeeded in converting the wild productions of untamed nature into bodies better adapted to his artificial wants, nothing has produced more past advantage or promises more future profit than *hybredizing*. We shall not refer in this place to what has been done in the animal kingdom, but confine the attention of the reader to its effects upon vegetation.

The practice is regarded as one of very recent date; and so it is, as an artificial process, applied by rule to definite purposes. But he must be a bold man who dares to assign to it historical limits; on the contrary, it may be supposed to date from the creation—or rather, it is in a manner certain that it does. The presence of winds or insects must necessarily from the begining have produced effects upon plants which resulted in hybrid productions.

Hybridizing is effected by applying to the stigma of one plant the pollen of some other; the end of which is the generation of a form participating more or less in the attributes of both its parents. Nature, in her wildest state, opposes no insurmountable difficulties in the way of this operation. Insects, bepowdered with the pollen of one plant, plunge into the recesses of another, and thus effectually destroy the purity of races. The natural brush on the body of a bee will convey the subtile powder as well as the trim camel's hair pencil of the artificial operator.

It is contended, indeed, that this cannot be; because if it were so, all species must, in the lapse of ages, be confounded in one inextricable chaos. But, in the first place, this supposition is of little force, till it is shown that that which is easily done artificially cannot possibly take place naturally; and secondly, it must be proved that the wild races of plants actually do remain in all their original purity. No botanist would, we suspect, vennture upon such an argument as that. The genera Salix, Rubus, Ross, and Carex, would make the stoutest advocate of original purity pause before ne threw himself into the lists. Nobody, in fact, can possibly doubt that wild hybrids exist, are common, and perhaps much

more common than we think for. We will not stop to quote notorous and proved instances of this, because we regard the fact as being beyond all dispute.

Let us not, however, infer from this that no natural obstacles are opposed to the indiscriminate mixture of races in plants; on the contrary, there are barriers which cannot be overleaped. By some mysterious agency, there is a complete bar to all intermixture of plants not closely related to each other. An elm may certainly mix with an elm, and perhaps with a nettle-tree; but not with an oak. A peach may, peradventure, cross a plum, but not an apple. These obstacles are, doubtless, connected with the molecular constitution of plants, the precise nature of which we have no means of examining. Another obstacle consists in the obvious fact that the pollen of a flower has a better opportunity of falling upon the stigma that belongs to it, than pollen brought from any distance; and we know that if pollen has once taken effect, no after-application of other pollen can change the result. In fact, the natural hybridizing of wild plants will generally take place when, owing to some accidental cause, the proper stamens of the flower prove defective.

But there is a still more effectual obstacle to the confusion of races by natural hybridizing. Although we conceive that the *production* of hybrid plants naturally is of more common occurrence than may be supposed, it must be remembered that the *preservation* of them is quite an artificial process. A hybrid tree springs up; it has no means of multiplying itself, except by seed. That seed has no stable constitution, but has a tendency to return towards the condition of one of its parents; in this way the hybrid disappears, while the parents remain; or it may be, and often is, barren; and then it remains as a solitary, childless individual. Again, a hybrid herb appears; it is exposed to the same obstacles as the tree, in the way of perpetuation: it is barren; its seeds of themselves tend towards the original stock, which is recovered in a generation or two; or they are at once fertilized by the pollen of one of the hybrid parents, when the tendency to a return to its original stock is increased tenfold in strength. It is not, therefore, likely that natural hybrids will often be long perpetuated, although they may be frequently produced.

We mention these things by way of vindicating the hybridizers, who have been accused of attempting to subvert the whole order of nature by monstrous practices. It is clear that they only imitate the practices of nature. It is equally clear, too, that the occasional formation of natural hybrids is intended as a manifestation to man of one of the sources of power with which he is so largely provided. His reason is to be called upon to turn to profitable account, that which, in savage nature, leads to no result.

Hitherto the operation of hybridizing has been mainly confined to gardens. But see what advantages have come of it there. What

were our Roses in 1780, when the first China Rose reached England? and what are they now? The China Rose hybridizes so freely with almost every other, that there is hardly an ancient species to which it has not lent some part of its rich foliage, gay colors, and abundant blooming. Can anything be more striking than the effect of hybridizing upon Pelargoniums, Heaths, Gloxinias, Verbenas, and Gladioli? By this process, we have given to the hardy Pears of the north all the richness and delicacy of those of the south; to watery grapes the perfume of the Muscat, to the pale-faced but hardy Rhododendrons of the Caucasus and America, the rich and glowing colors of their tender brethren of India; to the gaudy Azalea of Pontus, the crimson of the small-flowered fragrant species of the U. States.

Such striking consequences of the very first operations in hybridizing, have excited a universal desire to vary and extend them. Everybody now, who cares for his garden, asks himself in the first place what he can do to get new seedlings; and to hybridizing he looks exclusively for assistance.

Hybridizing is a game of chance, played between man and plants. It is in some respects, a matter of hazard. What increases the charm of the game is, that although the end of it may be doubtful, yet a good player can judge of the issue with tolerable confidence, and that skill and judgment have in this case all their customary value.

Though hybridizing has already led to important results, they are probably nothing compared with what may be expected to come of it. We anticipate through its assistance, a change in the whole face of cultivated plants, and we shall be much surprised if even a few years do not bring us acquainted with races of trees, esculents, corn, and forage plants, of at least as much importance in their way, as those which have already appeared among fruits and flowers: all that is wanted is to call attention to the subject, and to point out what the principles are which the experimenter has to bear in mind.

The effect is produced by applying the pollen of one flower to the stigma of another. The pollen indicates the male parent, the stigma the female. In performing the operation, it is necessary to use these precautions:—The female flower must be deprived of her stamens before they burst and disperse their pollen; and as soon as the stigma is glutinous enough to hold it fast, the pollen must be applied with care. Should this course not be taken, the stigma is very likely to be inoculated with the pollen of her own or some other flower, and then the pollen which it is intended to use will not take, for it must always be borne in mind, that a stigma once inoculated cannot be inoculated again. From want of these precautions, people are continually fancying they have obtained hybrids when they have only gained natural seedlings. At least half the specimens of so-called hybrids sent to us for examination,

are not hybridized at all. When the Dean of Manchester, who is the greatest of all authorities in this matter, wishes to obtain a cross, he always endeavors to force the female parent before others of this kind blow, so as to be insured against accidental inoculation from pollen floating in the air. Want of attention in these minutiæ has led to some singular errors on the part of a very ingenious correspondent, who fancied he had obtained hybrids between Crinum, Ismene, Buphane, Calostemma, &c., while he had only raised the usual seedlings.

It is hard to say within what limits the operation may be successfully practiced. The general rule is, that plants only which are very nearly related, are able to inoculate each other. But there may be exceptions to this. At least we know that very near connections have, or seem to have, a great aversion for one another. For example, a Raspberry and a Strawberry are first cousins, yet they appear to have no mind for an alliance. A Gooseberry, Currant, and Black Currant, are still nearer to each other, and their repugnance seems invincible; at least nobody has yet found means to hybridize them with each other, though many have attempted it. On the other hand, Heaths, different as they are from each other, intermingle freely; Cereus speciosissimus is readily inoculated with the night-flowering Cereus; and even the creeping Cereus has been crossed with the former; the Rhododendron will fertilize the Azalea; and, strangest of all, the Red Cedar on several occasions has been found to inoculate the American Arbor Vitæ, the issue from which is that curious whip-cord-branched plant, called in the gardens Thuja filiformis. This singular shrub was so produced for the first time in Messrs. Loddiges' nursery at Hackney, and has since been obtained in the same manner at Paris. These facts open a very wide field for inquiry, and are especially valuable as affording evidence that the limits of hybridizing are far from being narrow.

In the midst of many experiments conducted without exactness, from which no safe conclusion can be drawn, there are some which, in the hands of such men as the Dean of Manchester, seem to justify the important inference that, as a general rule, the properties of the male parent will be most conspicuous in the hybrid. For example, Mr. Herbert crossed the long yellow-cupped common Daffodil, with the small red-edge cupped Poet's Daffodil; and the seeds of the common daffodil furnished a bulb with most of the attributes of the Poet's Narcissus. The same gentleman obtained also out of a capsule of Rhododendron ponticum, inoculated by Azalea pontica, seedlings which had entirely the habit of the latter or male parent. When the common scarlet Azalea, with its crimson flowers and narrow leaves, was inoculated by Azalea pontica, Mr. Gower found that his seeds produced plants much more like the male than the female parent. Exceptions,

or apparent exceptions to this, do no doubt exist, and hybrids could be found which are either half way between their father and mother, or more like the mother than the father; but as far as any means of judging at present exist, these would seem to be the exception and not the rule; and therefore the greater influence of the male may be taken as a tolerably safe guide in all experiments upon this interesting art.

From the Transactions of the N. Y. State Agricul Society.

INSECTS INJURIOUS TO THE FARMER AND GARDENER.

A SERIES OF ESSAYS, BY WILLIS GAYLORD.

Of all the departments of Natural Seience, there is perhaps none that possesses so much practical interest to the agriculturist as ENTOMOLOGY, or that part of it which relates to the character, transformation and habits of insects. The farmer may remedy almost every other disadvantage, and secure almost every advantage, either by change of location or improvement in culture; but no such change or improvement can reach the great evil of insects, except in the most partial manner. They surround him every where—they spring up at every step. Each plant introduced into cultivation introduces new enemies, and if, as is asserted by an eminent British Entomologist, every plant is preyed upon in its several parts of roots, stems, leaves and seeds, by as many as five or six different species of insects, we may readily conceive what a host of these depredators the labors of the husbandman assist in feeding. It may safely be affirmed that insects cause more loss to the farmers of the United States, destroy more of their crops, and cause greater deductions from their profits, than all other animals combined, and perhaps more than all other causes united. From the time the seed is put into the ground till the ripened seed is in the garner, there is a continued succession of attacks; and experience in a large part of our Union shows that whenever so deposited, it is very far from being safe from these feeble but still powerful depredators on the products of men's labor and skill.

Insects are the more injurious because their insignificance serves in part as a protection, and as a general rule it will be found that the smaller and more despicable the individuals of any tribe of insects may be, these things will be fully compensated by their greater numbers, activity and voracity. Were the facts not such as are daily or hourly observed, the amount of injury such minute animals can inflict, would be incredible. A thousand lions let loose in our country would not occasion so much loss of property

as does the canker-worm in a single season; nor would the march of a herd of mammoths over the western prairies leave such ruin behind as the march of the army-worm. Insects so minute and frail as to require a glass for their examination, or the most careful handling to prevent annihilation, by their numbers destroy the hopes of the farmer, and convert the fruitful fields into a desert. It requires no argument to prove that animals capable of producing such effects, whatever may be their insignificance individually, are deserving careful attention; and if any means of arresting their multiplication or preventing their ravages can be discovered, they should be made known. In entering upon a notice of some of the insects most injurious to agriculture, it is believed a short account of insects, as such, may be useful, as it is evident some introductory knowledge is necessary, that the observer may not make mistakes in the proper position of the depredators he is pursuing or has discovered. In doing this, all technicalities will as far as possible be avoided—the trivial or common as well as the scientific names when known, will be given, and the whole made as practical as possible. All insects may be classed as follows:

1. *Coleoptera.* This order includes all the kinds commonly called *beetles.* Their wing cases are hard, of various colors, and protect the true wings from injury.

2. *Orthoptera.* Crickets, grasshoppers, locusts, &c., belong to this order of insects.

3. *Hemipetre.* This order includes the froghoppers, bugs, aphides, &c. The name means *half-wings.*

4. *Neuroptera.* The libellulæ or dragon flies are good representatives of this order.

5. *Hymenoptera.* The ichneumon fly, hornets, bees, &c., belong to this order.

6. *Lepidoitera.* All butterflies and moths are included in this order of insects.

7. *Strepsiptera.* The parasitical insects found on wasps and bees, belong to this order.

8. *Diptera.* The horse, cattle, and house flies, are representatives of this order.

9. *Suctoria.* The flea is the most common insect of this order.

10. *Parasita.* The louse found on man, and those on birds and animals, represent this order.

Such distinctions may seem unnecessary, but the value of observations on the habits of insects mainly depends on the descriptions being such that there may be no mistake as to the animal itself when seen by others. To mention only one instance, the words bug and beetle are used by many as synonymous, but the above distinctions will show that the beetles have hard wing cases, while bugs proper have only the rudiments of wings or half wings.

That destructive insect, the wheat weevil, by some has been confounded with the wheat fly; and much useless discussion has taken place that might have been spared, had it been recollected or known that the true weevil is always a bug or beetle, while the fly frequently mistaken for it is a true fly, belonging to the Dipterous instead of the Coleopterous order.

The metamorphoses, or changes that insects undergo, are among the most curious things in the whole range of animal existence; and the nature of these changes should be understood, or mistakes as to the identity of insects can scarcely fail of occurring. That most insects are produced from eggs, people are aware; but how many even now are ignorant that from the common wriggler of our cisterns of rain water, proceeds the musquito; from the hairy caterpillar of autumn the beautiful tiger moth; or from the stinking, odious fennel or carraway worm, one of the most splendid butter-flies. Mr. Kirby states the curious fact that the Greek worm from which our word metamorphsis is derived, is not found in any Greek writer previous to the date of the New Testament, and its use in natural science seems to have been derived from its mythological signification.

There has been some discordance as to the mode of the successive developments of insects, but it is enough for the present purpose that we know of their existence in the states of the egg, the larvæ, the pupa or chrysalis, and the image or perfect insect.—Some few, however, do not pass through these several transformations; but issue from the egg nearly in the form they are to maintain through life. The apterous insects or those without wings, such as the ant, are mostly of this class.

The stage of life in which the insect becomes of interest to the agriculturist, is the *Larvæ* or worm stage, as it is in this that they usually continue the longest, and effect the greatest mischief. In this state they eat voraciously, and generally increase in size rapidly. Of this the common flesh-maggot and silkworm furnish familiar examples. At the termination of the larvæ state, the insect frequently sheds its former covering, becomes motionless, and in this state is called the *pupa*. After remaining in this condition for a longer or shorter time, the shell or covering of the pupa cracks, and the perfect insect issues, to enjoy for a few days its new life, propagate its species, and die. Comparatively little damage is done to the farmer by insects in the perfect state, though there are some exceptions, as in the case of locusts, grasshoppers, &c., but the damage they effect by their voraciousness in the larvæ state is immense. The egg of the insect is generally deposited on or near the spot where the future insect is to finds its subsistance, and after a short time is hatched, or the larvæ issues from it to commence its depredations; but in a few instances, the egg is hatched in the body of the parent, and is active immediately on expulsion. The larvæ of the grey flesh-fly is an instance of this

ovoviviparous production. In some few cases, the instinct which guides the female insect in depositing its eggs where the young will find food, fails her, and her young consequently perish. A curious example of this occurs with the flesh-fly *Musca carnarica*, which we have known mistake that fetid mushroon, the *Phallus canis*, for carron, and deposit great numbers of eggs upon it, where they were sure to perish in a few days.

In treating of the insects injurious to Agriculture, it will be more convenient perhaps, to divide them into the following classes: those injurious to the vegetable garden; those injurious to field crops; those injurious to orchards and fruit trees generally; and those injurious to domestic animals.

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Section I. *Insects injurious to the Vegetable Garden.*

Of the multitude of insects that infest our gardens, there is, perhaps, none more common or destructive than the *cut-worm*. This is the larvæ of a moth, which is very well described by Mr. Bruce, in the first volume of the American Journal of Science, under the name of *Palæna noctua devastator*. The worm is brown, fat and sluggish, generally about an inch in length, and feeds only at night. Cabbages, beans, ect., are its favorite food. These it cuts off at the surface of the ground, feeds on them until it is gorged with food, when it burrows in the ground near its place of feeding, and where it may be easily found and killed. There are quite a number of different worms known by the names of cut worms, black grub, ect.; but as their habits are nearly the same, and are destructive, for all useful purposes they may be classed together. Dr. Harris, a few years ago, collected a quantity of cut worms from the vegetable garden, the corn field and the flower garden, all as he supposed of the same kind; but when they came to produce the perfect insect, as many of them did, the collection produced no less than five different species of moths. From the fact that fields or gardens ploughed in the fall are not as liable to suffer from the cut worm as those not so treated, we have been inclined to the opinion that the egg deposited by the parent moth was hatched in the fall, and that the larvæ buried itself in the earth on the approach of winter; and that the fall ploughing, by bringing it to the surface, prevented the formation of a new place of retreat, and death from cold ensued. The only method of destroying them, that we have found successful, after they make their appearance, is to visit the garden early in the morning, and where a plant has been cut down during the night, to dig out and kill the depredator at once; and the same mode of proceeding has been found successful where the destruction of a corn crop was threatened, as may be seen at page 206, vol. V. of the Albany Cultivator; or vol. xvii, page 268 of the N. E. Farmer. Sea-mud,

probably from the salt it contains, has sometimes kept off the wire-worm; but experience shows there is nothing so certain as an examination in the morning, and the death of the offender. Beside, when the worm is killed, the transformations are stopped at once, and the laying of hundreds of eggs prevented. Where the cut-worm is known to exist in the garden, cabbage plants, when set out, should be protected by wrapping some paper around the stems, extending an inch or two above and below the ground; as the worm attacks plants at the surface of the ground, this will save them.

The squash bug, *Coreus tristis* of De Green, *Coreus ordinatus* of Say, is another well known depredator on squash, melon, and pumpkin vines, puncturing the stems and leaves, and thus weakening or destroying the plants. When it has attained its growth in September, it is rather more than half an inch in length, of a rusty dark color, occasioned by small black punctures on an ochre yellow ground. The eyelets of the squash bug are two small glassy eminences on the back part of the head; but the most distinguishing characteristic of this insect is its powerful and disagreeable smell when crushed, or roughly handled. The young bugs are so different in appearance from the older ones, that they could hardly be considered of the same family by careless observers. Squash bugs are to be treated in the same manner as the cut worm. The vines must be examined frequently, while young, and all bugs and eggs found, carefully destroyed. It should be remembered that the feeblest plants are the most liable to be assailed, and that consequently any manuring that gives them a rapid growth will soonest place them beyond danger. We have found watering the plants, or the leaves, with soot-water, or water drained from manure, produced a good effect, being offensive to the bugs, and accelerating the growth of the plants. For several years past, we have adopted the following method in cultivating squashes: in the part of the garden devoted to them, we place at suitable distances, say six or eight feet each way, piles of manure of perhaps half a cord each, of a mixture of fresh stable dung, and rotted manure, on which we place garden earth to the depth of eight or ten inches. On this partial mound, on different sides, the seeds are planted, and the heat generated by the fermentation, gives a quick start, which is well sustained by the manure below. In this way, they rarely fail of being very productive, and are usually free from the attacks of all worms and bugs, the yellow bug excepted. Melons sometimes succeed well in the same way, but are more liable to suffer from drought than the squash vine, as the former do not throw out such strong secondary roots from the joints of the vines, as do the latter. The next year, the part of the garden so manured will be quite rich, and another part should be taken for the squash beds; for rotation is as useful in the garden as in the field.

The yellow striped or cucumber beetle, *Criocerus vittata* of Fabricius, *Galeruca vittata* of Harr, is another destructive and formidable enemy of the gardener. Cucumbers, melons, squashes, and all plants of that family, appear to be its favorite food; and such is their number, that if no precautionary measures were used, scarcely a tithe of these plants could escape. The suddenness of their appearance is a peculiar characteristic of this insect: one day none may be seen—on the next, they are present in multitudes. Several years ago, we planted a plot at some little distance from the garden, with seeds from the acorn squash, one of the very best varieties for winter. The plants came up finely, and were unusually vigorous, and were so far advanced that all danger from the bug was considered passed. Compelled to be absent two days, the garden was overlooked, and on the third day when we returned, scarcely more remained of the rapidly growing plants than the network of their leaves. They were literally covered by the striped bug. Determined on revenge at least, we laid off our coat, and with the thumb and finger commenced an onslaught upon the depredators. For the time, we cleared the vines, but were obliged to repeat the operation for several successive days, when we retained possession of the field—the bugs disappeared, and several loads of fine squashes were the reward of the effort. The writer has tried almost every thing in the way of application, such as snuff, tobacco, and cayenne—plaster, soot, and infusions of many articles said to be infallible—all of which, we are sorry to say, were nearly or quite useless. Small square boxes, covered with millinet, or even without such covering, are the best preventives we have ever tried; but the only effectual remedy, and the one the least costly, is the dexterous application of the thumb and finger. As the striped bug is active by night as well as by day, it is probable that bright fires kindled in the garden would attract and destroy more or less of them, as they are known to do the May-bug and other beetles that fly in the twilight.

There are many cultivators of onions who find from the first coming up almost of their plants, until their growth is attained, that more or less of them turn yellow. If these are examined they will be found to contain a small larvæ or maggot, and the injury apparent is usually in proportion to the number of these in the bulb. These larvæ are the product of a small fly, not so large as the common horse fly, and of an ash grey color, the *Anthomyia ceparum* of the naturalist. The eggs are laid on the leaves of the young plant, and the worms when hatched, make their way into the root or bulb of the onion; after the destruction of the onion, it passes into the earth, where it passes through the pupa state, and emerges a perfect insect in about twenty days. There are several generations of worms in a season; and where they become prevalent, are the source of great injury. No method has been found effectual in destroying these insects. Kollar says that strewing

charcoal, made fine, on the beds, is the best remedy. We were acquainted with a man who always succeeded in raising fine crops of onions when all around him failed. In the spring, as early as possible, he prepared his onion ground for the seed, when he allowed it to remain for a week or ten days, that what seeds of weeds were near the surface might vegetate. He then covered his beds with straw, to the depth of eight or ten inches, and burned it off, and then planted his seeds as quickly as possible. He says he gained two advantages by this course; he destroyed all the surface weeds, and gave the soil a capital dressing of ashes and charcoal. As he was never troubled with worms in his onions, it is probable he might have attributed his exemption to this dressing. Another person, a blacksmith, always uses the hearths where he burns his charcoal, for his onion bed, and with perfect success. It seems likely, therefore, that a dressing of charcoal and ashes in some form, is one of the best applications. If the worm appears in the onions, they should be pulled and destroyed by burning at once. The white onion is more liable to destruction by the worm than the other varieties.

(To be Continued.)

From the Greenville Mountaineer.

STATE AGRICULTURAL SOCIETY.

The first semi-annual meeting of this body convened in the Methodist Church, at this place, on Tuesday last, in accordance with previous notice. Members and Delegates were in attendance from nearly every section of the State, and the number was larger than could have been reasonably expected. We were delighted to witness so many of our distinguished citizens taking the lead in the important matter of agricultural improvement, as was the case on this interesting occasion. The Cattle Show took place on Wednesday. The Stock exhibited consisted of numerous kinds, and some specimens would have done credit to a similar exhibition in any part of the world. We heard several persons remark, who have been in the habit of attending the annual meetings in Columbia, that the hogs were at least equal, if not superior, to those generally showed at that place. The day was as fine as could have been wished, the concourse of spectators large, (above 1000 persons,) and every ceremony passed off to the satisfaction and delight of all present.

This is the first time the State Society has held a meeting out of Columbia, but it is now the intention to meet in different Districts every summer; and we have no doubt but the arrangement will inspire a zeal and improvement in the Agricultural pursuits of our State, which has never before been witnessed.

Tuesday, Sept. 10, 1844.

The State Agricultural Society met at Greenville, as ordered by the meeting in December last. The President called the meeting to order, when the delegates and members enrolled themselves.

The Society being now organized, Col. R. F. W. Allston introduced the following Resolution:

"That the Resolution passed in November, 1840, requiring the payment of an "entrance fee" on the part of competitors for the Premiums of the Society, not being members, be, and the same is hereby annulled; and that the Premiums of the Society shall hereafter be held open to the present competition."

This motion was discussed by Mr. Allston, Col. Brooks, Dr. Gibbs, Mr. M'Bee and General Thompson, and was finally adopted, with the following amendment, proposed by Gen. Thompson:

"That the Premiums of the Society shall be free to all members, either of the State or local Societies—all others shall pay one dollar for the privilege of competing for said Premiums."

Mr. Roper then introduced the following Resolutions:

Resolved, That a combined system of Agriculture, Manufactures and Commerce, are essential in promoting the prosperity and happiness of a community.

Resolved, That the large extent of country opened and preparing for the culture of cotton, in the Western and Southern States, and the superior adaptation of the soil to that culture and other motives, render it important for the Farmers of South Carolina to resort to a more varied means of promoting their individual and the general welfare.

Resolved, That to accomplish this purpose, we recommend a system of household manufactures in every article where domestic skill can be made available. We recommend the raising of our own Flour, Bacon and Stock, with an abundant grain, root and hay crop, for the purpose of sustaining them, together with provisions and supplies of all kinds.

Resolved, That a scientific mode of culture, with the application of manures, which in all civilized countries have become objects of national direction, will greatly advance our prosperity. And that a memorial be sent from this Society to the Legislature, praying a continuance of the system of Agricultural and Geological Survey, till the whole State be scientifically explored, and the domestic resources of the country fully developed. And further, we recommend to all farmers the advantage of consulting the Agricultural and Geological Surveyor as to the nature of their soils, and best means of increasing that fertility and adaptation to raising a greater variety of products than are at present cultivated.

These Resolutions were discussed by Mr. Roper, Gen. Thompson, Dr. Gibbs, Hon. J. R. Poinsett, and Major Perry, and adopted; and the following Committee appointed to petition the Legislature accordingly, viz: R. W. Roper, Dr. Gibbs and V. M'Bee.

[Col. Allston then introduced Resolutions proposing some alterations of the Constitution of the Society, which were adopted, but for the want of room, we omit them.—*Ed. Mountaineer.*]

On motion, is was agreed the Exhibition should take place at 10 o'clock on to morrow, and the Oration at 1 o'clock.

The following are appointed as the Committees to make the awards:—

On Horses.—O. B. Irvine of Greenville, R. F. W. Allston of All Saints, E. C. Leitner, of Spartanburg, Paul Hamilton of Pendleton, A. G. Verdier of St. Lukes, B. H. Wilson of All Saints, Isadore Lartigue of St. Peters, Thos. Henderson of Newberry.

On Cattle.—J. R. Poinsett of All Saints, Jas. B. Davis of Columbia, Whitfield Brooks of Edgefield, Wm. Summer of Newberry, G. R. M'Cullough of Abbeville, J. B. O'Neall, of Newberry.

On Mules.—R. W. Gibbs of Columbia, Henry Parr of Fairfield, B. Statham of Greenville, Wm. Walker of Spartanburg, R. W. Roper of Charleston.

On Hogs.—Geo. Seaborn of Pendleton, John Glenn of Newberry, V. M'Bee of Greenville, S. M. Earle of Greenville, George Nicholls of Spartanburg, S. M. Wilson of Pendleton.

On Sheep.—B. Dunham of Greenville, John Rivers of St. Andrews, B. F. Perry of Greenville, Rev. Mr. Potter of Pendleton, Samuel Clark of Edgefield, James A. Black of York, M. Suber of Newberry.

Wednesday, Sept. 11.

The Society met at 10 o'clock, and the meeting being organized by the President, the Secretary read the proceedings of the 10th.

The Hon. J. B. O'Neall introduced the following Resolutions, which were unanimously adopted:

Resolved, That the President of the State Agricultural Society be requested to present to Mr. Edmund Ruffin, late Agricultural Surveyor of the State, the thanks of this Society for the able and efficient discharge of his duty.

Col. Brooks of Edgefield, introduced the following:

Resolved, That the Agricultural Societies of Greenville, Pendleton and Spartanburg, be respectfully requested to reply to the following queries at the next meeting of this Society in Columbia, on the 4th Monday in November:

1st. What is the nature and kind of soils in your respective Districts? What are the principal products? What modes of cultivation are in use?

2d. What are the usual rotations of crops in practice? What manures are in use, and in what way applied, whether broadcast, in checks or drill?

3d. What agricultural implements are in general use? What kind are used in seeding small grain, what in the preparation of land, and what in the cultivation of corn and cotton?

4th. What are the favorite breeds of Horses, Cattle, Sheep and Swine, and how is the District supplied with these domestic animals? How are they wintered, and what grasses are used for hay?

5th. What fruits are cultivated, and what is the condition of the Horticulture of the District?

6th. Are there any dairy and grazing farms in the District, where cheese and butter are made for market?

7th. What effect is produced upon the Agriculture of the District by the practice of leasing land upon shares, and what agricultural changes are necessary to advance the prosperity of the District?

8th. Are root crops for stock cultivated? And if not, be pleased to state the cause.

9th. State the average annual crops of cotton in each District, and the probable average per acre.

10th. If there be any manufactures in your District, communinate the number and kind, the number of hands employed in each, the quantity of the raw material used in the cotton factories, and especially the profits of each establishment of whatever kind, and such other information as it may be convenient to furnish, or important to the Society.

11th. Is there marl or lime in your District? If so, is it used for agricultural purposes, and what is the cost per bushel to the farmer? These Resolutions were advocated by the mover, and agreed to.

Col. R. F. W. Allston's proposed amendments to the Constitution were now called up, separately put, and agreed to by the constitutional majority.

A silken Flag, manufactured by the Misses Flemming, of Spartanburg, and painted by a native artist, (Mr. Wm. K. Barclay of Columbia,) lately presented to the 36th Regiment, was exhibited to the Society.

Two specimens of colored and figured Silk, manufactured by Mrs. Dantzler, of Spartanburg, were exhibited. Mrs. Belcher presented a straw bonnet and hat, made by herself. On motion of Hon. J. B. O'Neall, it was unanimously agreed that the thanks of this Society, be tendered to each of these ladies, for the *skill, taste and elegance* of their several specimens, and to Mr. Barclay, for his skill as an artist.

Mrs. Poinsett presented, through the Hon. J. R. Poinsett, to the Society some baskets of Grapes, grown in her garden, which on motion, a Committee was nominated of *venerable bachelors*, consisting of Messrs. Dunham, Stone and Goodlett, to hand around for distribution to the ladies in the gallery, and return thanks to Mrs. Poinsett.

Dr. R. W. Gibbs brought the attention of the Society to a Resolution, adopted some time since by the State Agricultural

Society, to sustain an agricultural paper proposed to be issued by Mr. Morgan, publisher of the Temperance Advocate, in Columbia. He stated the *necessity** of this paper, its remarkable cheapness, and the advantages likely to result from its support.

Mr. Smith, of Laurens, exhibited a Plough, called a *Labor-saving Plough*, and the following Committee were appointed to examine its advantages: Chancellor Johnson, B. Statham, Col. Glenn, W. Brooks, and B. Duncan, and the Chairman reported favorably of it.

The Committees, having examined minutely all the stock, which was highly encouraging to the Society, were now ready, and being called upon, reported their awards as follows:

The Committee on Horses beg leave to report, that the exhibition of Horses was highly credible and gratifying, giving promise of extensive and material improvement in the stock of this section of the State.

Your Committee award the premium for the best Stallion over five years old, for saddle purposes, to J. T. Whitefield, of Anderson, for his bay horse, by Bertrand, dam Blackburn's Whip, (bred by himself.)

For the best Stallion under five years old, to Samuel M. Earle, for his yearling by Monarch, dam by Nullifier, (bred by himself.)

For the best Mare or Filly under five years old, to Gen. Thompson's chesnut mare, four years old, by Jonn Bascom, dam by Red Gauntlett, (bred by himself.)

Your Committee particularly recommend Mr. Leverett's Filly, Fanny Elsler, as an animal next to that taking the award.

O. B. IRVING, *Chairman.*

The Committee on Cattle, having examined the many fine animals submitted to their inspection, have unanimously agreed to the following awards:

The premium for the best Bull over one year old, to Dr. C. B. Stone, of Greenville, for his Durham, bred by himself. At the same time the Committee are of opinion a Bull exhibited by Mr. Moore, of Greenville, deserves a favorable notice.

The premium for the best Bull under one year old, is given to Col. E. C. Leitner, of Spartanburg, for a Durham, bred by himself.

For the best Milch Cow, to V. M'Bee, for a native cow, bred by himself.

For the best Heifer, under one year old, to S. M. Earle, for a Durham, bred by Col. Hampton.

J. R. POINSETT, *Chairman.*

The Committee on Mules respectfully report that they have considered the merits of the Mules offered for premiums, and have unanimously awarded it to Maj. Elias Earle, Jr., of Greenville, for his mule, one year and four months old.

R. W. GIBBS, *Chairman.*

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*We hope, if there is such a *necessity*, that the planters of the State will remember the *Southern Agriculturist* is now printed in Charleston, and wants their support to keep it from failing in its object.

The Committee on Hogs respectfully report that they have diligently examined a very large number of various breeds of hogs, and most highly creditable to any country.

For the best Boar, over one year old, they award to Maj. J. M. A. Turpin, of Greenville, for a Berkshire and Lancashire cross—not without a most favorable notice of a strong competitor in a Berkshire, the property of the Hon. J. R. Poinsett.

For the best Sow, over one year old, to Dr. C. B. Stone, of Greenville, for his Berkshire.

For the best Boar, under one year old, to Dr. A. B. Crook, of Greenville, for his Berkshire.

For the best Sow, under one year old, to Col. D. Hoke of Greenville, for his Berkshire.

GEO. SEABORN, *Chairman.*

The Committee on Sheep make the following report:—

They have examined three pens of Sheep, belonging to Dr. Crook, S. M. Earle, and Mr. Stone. Whilst they would recommend most favorably all exhibited, they award as follows:

For the best Ram, to Dr. Crook—Bakewell and Southdown (bred by Col. Hampton.)

For the best Ewe, to S. M. Earle—Bakewell (bred by Col. Hampton.)

B. DUNHAM, *Chairman.*

These Reports were severally received, and the President made the distribution.

The Hon. J. B. O'Neall was now called upon and made his Address: and on motion of Gen. Thompson, the Society returned him thanks for its ability, and requested its publication, which was so agreed.

On motion of the Hon. J. B. O'Neall, Hon. J. R. Poinsett was requested to take the Chair of the President, and Col. Brooks introduced the following Resolution:

Resolved, That the thanks of this Society be returned to the President for his ability and impartiality in the discharge of his duties; and to the Secretary, for his diligence in the discharge of his labors.

The President on resuming the Chair, responded to this compliment with much feeling, and took his seat. The Secretary added "that he would only say, no occupation in his life afforded him so much pleasure as the discharge of his duties as Secretary."

On motion of Hon. J. B. O'Neall,

Resolved, That the thanks of this Society be tendered to Mr. Smith, for his "Labor-saving Plough," and that it be recommended to the favorable notice of the Farmers.

Dr. Gibbs moved that the thanks of the Society be returned to the Methodist Church for the use of their building.

JAMES B. DAVIS, *Rec. Secretary.*

For the Southern Agriculturist.

PARTICULARS OF THE EXPERIMENT OF MARLING.

Mr. Editor,—I noticed in the last number of your valuable journal, a communication headed, "Successful Marling," in relation to a field I had marled for the present crop of cotton, in which the writer expresses a desire to learn the particulars of this experiment; it affords me pleasure to give any information in my power on the subject—being fully satisfied myself from a previous trial, of the great efficacy in the use of marl. I instituted this experiment to endeavor to put its beneficial effects beyond doubt, and to convince those who were yet sceptical, of the inestimable value of this substance;—your author has been misinformed as regards the land which was marled being an *old field.*

The following were the particulars of the experiment:—

Twenty-five acres of very light high land was cleared of its original growth, oak, hickory and pine, in the winter of 1842, and planted in cotton every year; in February last, the beds were leveled with the hoe, and the marl carted on, at the rate of 150 bushels to the acre, which was well puluerized, and strewed over the field as equally as possible—strength of marl 70 per cent. The land was bedded in March and planted on the 1st of April. Ten rows through the middle of the field were left without marl. The cotton crop has suffered very much from continued drought, the marled cotton much less so than any other. In the above experiment no manure was used. It was my intention to have had the cotton of this field kept separate, in order to test its relative production with that of my other fields, but during my absence from home, the cotton was mixed.

In 1843, a square of 105 feet was marled in the same field, at the rate of 100 bushels to the acre; marl 70 per cent. The beneficial effects were very evident, particularly in the early maturing of the fruit: a gentleman who visited this field in the summer of 1843, was asked his opinion as regards the appearance of this square of cotton, he replied, that it was more luxuriant; that he saw very few blossoms compared with the other portion of the field; on examination it was discovered that *pods* had taken the place of the *blossoms.*—Shewing evidently, that the marled square was at least ten days in advance of the other.

The bed of marl is about one mile from the field; when not interrupted, carted twelve cart loads a day; seven bushels a good load for two small mules—the road being very rough.

Yours, &c. JOHN A. RAMSAY.

Charleston, Sept. 17, 1844.

For the Southern Agriculturist.

A SHORT NOTICE OF THE USE OF MARL AS A MANURE.

BY DR. J. LAWRENCE SMITH.

As the time is approaching when those planters who intend marling their lands, should prepare themselves for so doing, it may be of general utility to give some condensed information connected with the use of lime, more especially as applicable to our low country. What is written upon the subject of lime, is usually treated of in too much detail in the various works on agriculture and agricultural chemistry, to fix properly the attention of those whose time is devoted to practical farming. The importance of the presence of lime in a good soil, has been fully settled; and it may be considered indispensable to the healthy growth of the plant; for wherever lime is absent from a soil, it is almost barren, and where it exists in but a minute quantity, vegetation is of a sickly and imperfect character. On the contrary, those soils derived from rocks rich in lime, are among the most fertile upon the face of the globe: this is so well known, that no one pretends to deny a fact based upon such incontrovertible evidence, and from this we would naturally conclude, that if lime be not present, an addition of it would fertilize the land, by supplying that deficiency. An agriculturist writing upon this very subject, says, "that a larger surface of the cropped land of Europe, is improved by the assistance of calcareous manures and sands, than by the aid of burnt lime and farm-yard manure together." What is true of the use of marls in Europe, is also applicable to this country, and it once being admitted that it is useful, it only remains for us, living in a section of country abounding in this manure, to find out what are the benefits to be derived from it, and what circumstances are to be observed in the use of it.

It is our good fortune to possess the richest marls that have ever been discovered, many of them being almost pure carbonate of lime. We have various kinds, differing both in their physical and chemical characters, such as the hard and stony, compact, soft and friable, green sand marl, &c. The hard variety, although it may be rich in calcareous matter, is not among the most valuable, for it will be necessary to burn it prior to use, for the purpose of obtaining it in that impalpable condition requisite to an intimate admixture with the soil; most commonly a soft and friable marl, although not half so rich in lime, is preferable—in fact, the facility with which a marl crumbles, forms an important item in determining its value, it being important in spreading marl over a field, that no lumps should be left unbroken. Planters are told, that they must not expect the maximum benefit of a marl for several years, for this very reason, that thorough impregnation with the soil is necessary for that purpose, and a year or two will not suffice to bring this about.

The value of a marl is next determined by its composition; upon this head I have made a great many examinations, and have detected the presence of two or three substances previously not known to exist in marls. The ingredients present are carbonate of lime, carbonate of magnesia, silica, alumina, oxide of iron, phosphate of lime, phosphate of iron, sulphate of lime, fluoride of calcium, crenate of iron, crenate of lime, crenate of alumina, ammonia, and organic matter; these are not found in every marl, some of them occurring but very rarely.

The following is a minute analysis of some of the Ashley River marl, taken from Mr. John Ramsay's pit:—

Carbonate of lime, - -	65.8
Carbonate of magnesia, -	2.4
Silica, - - -	15.6
Alumina, - - -	10.0
Phosphate of lime, - -	5.0
Phosphate of iron, Fluoride of calcium, Crenate of iron, Crenate of lime, Crenate of alumina, Ammonia, Organic matter, -	1.2

It is to be remarked, that only two or three of these ingredients are of any importance in an agricultural point of view, more especially the carbonate and phosphate of lime, the latter being present in this marl in a very large proportion; whether or not it has been derived from the remains of animals, that are so abundant in this deposite of marl, it is of very little importance to decide here, especially as my views upon this subject are prepared for publication in another journal. In general it will be found, that most of our marls contain much less phosphate of lime than that indicated in the above analysis, it certainly is a valuable ingredient, especially where grain is the object of culture; in 100 bushels of the marl examined, there is an equivalent of from 6 to 8 bushels of bone earth—a larger quantity than has been recommended by experienced farmers to place upon an acre of land, for the culture of turnips, a crop that appears particularly benefited by it. The Ashley River marl is in every respect an excellent one, and should recommend itself to all planters that have it within their reach.

As regards the quantity of marl to be employed upon our lands, it is difficult to come to any positive conclusion, even after knowing its strength which must in all cases be determined. The planters should experiment upon this; for although Mr. Ruffin's statements in his work on calcareous manures may be very good as a general rule, still the characters of the soil in different sections of the country require a special study, nor must every one expect to obtain the same results from the use of this manure, and therefore,

ought not to feel disappointed and condemn its use, if he shall not derive as much benefit as his neighbors. Moreover, one should not hesitate to employ good friable marl, though it contain but from thirty to forty per cent. or even much less of carbonate of lime.

It must not be supposed, that by increasing the quantity of marl we increase the fertility of the land, for there is such a thing as applying an over-dose, thereby injuring the texture of the soil, and hastening too rapidly the decomposition of the vegetable matter contained in it, for when this last disappears, the land no longer experiences the benefit of the marl, until there is a re-supply of vegetable matter in the form of scraping of the woods, &c.

A question of considerable importance is, how often ought lands to be marled? Upon this subject there is a diversity of opinion: some advise frequent marling with small quantities—others again, marl largely at the expiration of every ten or twelve years. The fact is, that lands when marled do not show the maximum effect for five or six years, after which time it diminishes, and appears to cease entirely at the expiration of twelve or fourteen years; the reason of this, is, that every year the lime is disappearing, by being taken up into the plants, and by penetrating into the soil below the reach of the plough.

It certainly would not be to the benefit of the planter to allow his land to be completely exhausted of the marl before its re-application, and it ought to be his desire to obtain every year all the advantage that can be derived from this manure; to do this, it would be well to apply every three or four years from thirty to forty bushels of good marl per acre to land that has been once well marled; to do this, it will require no additional labor, for if this is not done, four to five times that quantity will have to be applied at the expiration of every twelve years, and it is dividing this labor instead of doing it all at once, with a certainty, at the same time, of making a larger amount of crops.

Marl has been very highly recommended when applied in the form of compost, mixed with earth and vegetable matter, particularly where the land requires but a small quantity, as in the above case, where we wish to keep up the lime in the soil by an addition every three or four years. When the compost is made, it should be thrown up into heaps, and allowed to become old, protected from the rain by a shed; in this case, no inconsiderable quantity of nitre is formed, which is a valuable manure to plants; and, in my opinion, plays a more exclusive part in the growth of plants, than is at the present time admitted, the nature of which it is useless to mention here, as it is entirely of a theoretical character. The compost form of marl also serves to subdivide it thoroughly, and therefore brings about its action more immediately, which is another reason for recommending it in certain cases.

It will be sometimes found advantageous to employ burnt lime, (rich marl burnt will answer the same purpose,) particularly upon sour bottoms, and lands overgrown with rank weeds. One half the lime applied may be burnt, and the other laid on some time afterwards in its natural state; by using the burnt lime upon these places, the weeds are more rapidly destroyed, and the acidity of the soil more readily neutralized, and the injurious effect of salt destroyed; much of the salt-marsh, along both Cooper and Ashley rivers, might thus, with proper drainage, be made to produce excellent winter crops, as wheat, rye, oats, &c.

What are the effects of marl, and how produced? Farmers are now beginning to see that practical agriculture is being aided in a great degree by the light of science, and they are now not content with seeing the effects that a certain substance produces in benefitting their crops, but are anxious to know the why and the wherefore, in order to see if the principle cannot be farther extended, and out of the same labor to reap larger profits.

Without entering into any detail, the first part of this question is answered by the following extract from the writings of a distinguished agriculturist:—"The *observed* effects of marls and shell sands, in so far as they are chemical, are very analogous to those produced by lime, as it is generally applied in the quick or slacked state, in so many parts of our islands They alter the nature and quality of the grasses when applied to pasture—they cover even the drained bog with a short rich grass—they extirpate heath, and bent, and useless moss—they increase the quantity, and enable the land to grow a better quality of corn—they manifest a continued action many years after they have been applied—like the purer limes, they act more energetically, if aided by the occasional addition of other manure; and like them, they finally exhaust a soil from which successive crops are reaped, without the requisite return of decaying animal or vegetable matter."

The reasons of these effects are various. First, marl alters the texture of the soil, rendering a stiff clay soil loose, and stiffening a sandy one. Secondly, it facilitates the decomposition of the vegetable matter in the soil—neutralizes the various acids formed, which would, otherwise, act injuriously upon the vegetation. Thirdly, it facilitates the formation of nitre, an ingredient performing an important part in the growth of plants, by furnishing to them nitrogen. Fourthly, it is food to plants, some requiring more than others, thus—

		lbs.
50 bushels of oats, with its straw, &c., require	-	8.2
25 tons of turnips, with tops, &c., "	-	138.8
9 tons of potatoes, " " "	-	226.0

This then is a short notice of what may be expected from marl, and the reasons of its effects; but it must not be forgotten that marl, as well as lime, in any other form exhausts the soil, if employed

alone, by hastening the destruction of the vegetable matter, and this once gone, the lime itself becomes useless; this exhaustion though need never happen, if proper attention is paid to the restoration of the vegetable matter.

It is hardly necessary to say more, to refresh the memory of our farmers concerning the inestimable advantages to be derived from the use of this manure, so abundantly furnished us.

For the Southern Agriculturist.

UPON THE NATURE OF THE MARL UNDERLYING CHARLESTON.

Extract of a letter from Prof. Bailey *of West Point, to* Dr. J. Lawrence Smith.

It may be that the extract from this letter is of too purely a scientific character for this journal; but it must be interesting to us all notwithstanding, as it is connected with the geological structure of the spot we inhabit—a few preliminary observations will make what follows more intelligable.

Ehrenberg, a distinguished German naturalist, discovered a few years since, that there existed immense beds of earthy matter miles in extent, and many hundred feet in thickness, formed solely of the remains of microscopic animalcules, so small that millions were comprised within the compass of a cubic inch, their forms are varied, and their composition that of pure sand, in fact these little creatures when alive, were envelloped in flinty cells so indestructable as to remain perfect to the present day, a monument of their previous existence; these deposits have been found in many parts of the globe, but no where in greater abundance than in this country. There is a material brought from one of the Northern States, and used as a polishing powder, that consists entirely of these remains. Ehrenberg also found chalk to be made up of the remains of microscopic animalcules, whose covering was composed of carbonate of lime instead of silica.

These facts which may appear simply to show the wonders of nature, are destined to be of incalculable service to the geologist, in pointing out the comparative ages of many formations upon the globe, and Prof. Bailey of West Point has directed his attention to this subject, his labors have already been of great service, and we look with anxiety to see a complete detail of what he has done in this department of science. The subject of this letter is the immense bed of marl that underlies Charleston, and perhaps a large portion of the eastern half of this State, the thickness of this bed is unknown, it has been penetrated to a depth of over three hundred feet, and the specimens examined were from this boring.

"You can now inform the good people of Charleston that their *city is built upon a bed of animalcules several hundred feet in thickness*, every cubic inch of which is filled with myriads of perfectly preserved microscopic shells. These shells, however, do not, like those beneath Richmond and Petersburg &c., belong to the silicious infusoriæ, but are all derived from those minute calcareous shelled creatures, called by Ehrenberg polythalami. You are aware that Ehrenberg proved *chalk* to be chiefly made up of such shells, and you will doubtless be delighted to learn, that the tertiary beds beneath your city, are filled with more numerous and more perfect specimens of these beautiful forms, than I have ever seen in chalk or marl from any other locality. These forms are destined to be of great value in geology, and when the precise position of the formation beneath Charleston shall be fixed, and the forms belonging to each bed determined, we shall then have so perfect a guide to the geology of a large portion of our southern country, that by a mere glance through the microscope at portions of strata, scarcely large enough to be seen by the naked eye, their characteristic fossils may be seen, and their true position in the series determined. It will be a great labor however, to give the subject all the development it needs. I have myself examined the forms from as many as forty different and distant portions of our continent, but still feel very diffident in using the knowledge thus acquired." "The polythalamia to whose labors South-Carolina owes so large a portion of her territory, are still at work in countless thousands upon her coast, filling up harbors, forming shoals, and depositing their shells to record the present state of the seashore as their predecessors, now entoomed beneath Charleston, have done with regard to the ancient ocean."

HORN DISTEMPER OR HOLLOW HORN.

This disease sometimes called, likewise, the horn ail, is often fatal from unskillful treatment. It often makes its attack very suddenly, and may be known by the drooping of the head, lopping of the ears, a glassy appearance of the eye, lashing the sides with the tail, bloating of the chest, loss of appetite, &c.

Treatment.—Bleed from the neck and cut off the end of the tail, if it is soft and loose. Prepare a solution of salt in vinegar, and make it strong with pepper and pour it into each ear at the temperature of blood heat; this may be repeated twice in the twenty-four hours as long as the symptoms require. Put a table spoonfull of spirits of turpentine into the cavity on the top of the head a few times. Give two balls of tar rolled with meal, of the size of a butter-nut, twice a day.

The above method of treating this disease, is recommended by Mr. Samuel W. Bartlett, late of East Windsor, Ct., as having been very successful in a large number of cases treated by himself, and others in that vicinity.

From him we likewise learn that the crops in the valley of the Connecticut river, never looked better, and that the present crop of tobacco is likely to be immense if the season continued favorable.

July 16, 1844. [*Central N. Y. Farmer.*

WOOL.

We see it stated in the Tennessee Agriculturist, that Messrs. Buger & Chappell, of New-Orleans, advertise for 1,000,000 lbs. of wool, which is destined for the French market. This will open a new era in the agricultural business in some parts of our country, adapted to wool growing, as it is said that the demand for the new market thus opened will be permanent and increasing.

It has been thought heretofore, pretty generally, that a cold climate was necessary for the production of fine wool, but it would seem that this conclusion does not rest on a good foundation.—Some specimens purchased by the above house, at Nashville, Ten., have been pronounced by the agent the finest samples of wool he had ever seen in this or any other country. [*Southern Cultivator.*

NIGHT SOIL.

Our farmers might add materially to their supply of manure, by constructing their privies so as to enable them to make use of their contents. A gentleman from Connecticut informs us, that he mixed his night soil with swamp muck, adding a small quantity of lime and ashes, and made manure enough for five acres, which he planted to corn, and that the crop is equal, if not superior, to any one he has seen. [*Boston Cultivator.*

NEW WAY TO MAKE BUTTER.

The wife of a farmer saves herself the trouble of churning, by the following contrivance:—She ties up her cream in a linen cloth, over which she places a piece of print, and buries the whole in a damp place in the garden for twenty-four hours; she then takes it up, and turns the cream (which by this time is in the shape and consistency of a pudding,) into a bowl, and by stirring it with a wooden spoon, the butter quickly separates from the butter-milk, and is said to be sweeter than that produced by the ordinary method. [*Foreign item.—Cultivator.*

One thousand ships have sailed from various ports in Great-Britain for Guano. Thus, no sooner does a new avenue for trade present itself, than it is instantly glutted.